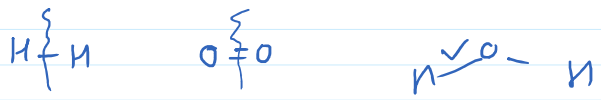
Types of Chemical Reaction

During a chemical reaction, there is breaking and making of bonds between atoms. This making of new bonds and breaking of old bonds give rise to new products. Atoms are not broken/formed in a chemical reaction, only bond between them is broken/formed.

$H_2 + O_2 \rightarrow H_2O$



Combination reaction:

When two or more substances (elements or compounds) combine to form a single product, the reactions are called combination reactions.

For example:

i) $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + heat$

Calcium oxide (Quick lime) — calcium hydroxide (Slaked lime)

ii) Buring of coal

$C(s) + O_2(g) \rightarrow CO_2(g)$

iii) formation of water from $H_2(g)$ and $O_2(g)$

$2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$

Exothermic reactions:

Reactions in which heat is released along with the formation of products are called exothermic chemical reactions.

Example

i) $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + heat$

ii) $C(s) + O_2(g) \rightarrow CO_2(g) + heat$

iii) Burning of natural gas

$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

IV) Respiration

Rice, potatoes and bread contain carbohydrates. These carbohydrates are broken down to form glucose. This glucose combines with oxygen in the cells of our body and provides energy. This is called respiration.

$C_6H_{12}O_6(aq) + 6O_2(aq) + 6H_2O(l) \rightarrow 6CO_2(aq) + 12H_2O(l) + energy.$

(glucose)

V) Decomposition of vegetable matter into compost

VI) $Mg(s) + O_2(g) \rightarrow MgO(s) + heat.$

Note:

Solution of slaked lime ($Ca(OH)_2(aq)$) is used for white washing walls. Calcium hydroxide react slowly with carbon dioxide in air to form a thin layer of calcium carbonate on walls. Calcium carbonated is formed after two to three days of white washing and gives a shiny finish to the walls.

$Ca(OH)_2(aq) + CO_2(g) \rightarrow CaCO_3(s) + H_2O(l)$

calcium hydroxide — calcium carbonate